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IDEA-0040-70  
Copy \_\_\_ of \_\_\_

5 February 1970

MEMORANDUM FOR: Deputy for Operations, OSA

SUBJECT : U-2C Ejection Seat

1. Reference our discussion on 2 February 1970 above subject, a review has been made of Air Force ejection systems, see Attachment No. 1. These figures should not be misinterpreted, however, in that all the dash one's of the various aircraft recommend bailout at 2,000 feet or higher. The cited minimum altitudes only indicate where it is possible to successfully escape if all systems work properly. In comparing the U-2C Technical Orders, it is readily apparent that this by far is the worst egress system in service for the statement is made that below 500 feet ejection will not be successful.

2. Since the philosophy on the use of the "C" Model is that of first a training aircraft and second a replacement for a destroyed "R" Model, see HQ's Message, [redacted] dated 15 October 1969, the aircraft will almost certainly be around for many years to come. This means, essentially, that a new and inexperienced project pilot is placed in the most hazardous configuration possible when he is asked to learn to fly the U-2C. A review of U-2 aircraft accidents bears out the fact that major accidents occur in the early stages of flying the aircraft.

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3. Lockheed Aircraft Corporation, in 1966, accomplished a study on modification of the "C" Model escape system. Engineering Research and Development, to provide a low-level escape system, was estimated to cost some [REDACTED] This program was cancelled when it appeared that the "C" Model would phase out and be replaced by the "R" Model. Since this has not come to pass, reconsideration should now be given to reopening the issue.

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Attachments

- 1 - Schedule
- 2 - [REDACTED] Letter, Same Subject, 1965

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<u>AIRCRAFT</u>	<u>ALTITUDE</u> (Feet)	<u>AIRSPEED</u>	<u>ZERO LANYARD</u>
T-33	125	120 knots	yes
F-4	GL	50 knots	no
F-104	GL	120 knots	yes
F-105	GL	85 knots	no
F-106	GL	0	no
F-100	100	120 knots	yes
F-102	GL	90 knots	no
F-5	GL	120 knots	yes
T-38	GL	120 knots	yes
T-37	100	120 knots	yes
F-111	GL	0	no <u>capsule</u>
T-28	GL	0 (with yankee system)	
SR-71	GL	0	no
U-2R	GL	0	no
U-2C	500	120 knots	yes

STATINTL

25 October 1965

Subject: Modification Program To Improve Pilot Safety and Performance in 'Idealist Project'.

To: Chief, OSA.

A - Preliminary Considerations

1. Several attempts have been made over the past thirty months to initiate and follow through on a modification program designated to improve 'Idealist' pilot safety and performance. Although some minor gains have been made in this direction, no comprehensive model improvement program has been developed, supported and carried out to achieve this objective.
2. Recent events in the form of (1) a fatal accident (2) changes in commanding officers at 'H' area and North Base and (3) prospects of a new "buy" in 'I' equipment have re-opened this issue and numerous conferences have been held on the matter during the past sixty days. Further definitive action to initiate such an improvement program requires a positive decision and approval by the Chief, OSA.

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3. [redacted] and the writer have conferred with operational unit personnel, contractors and OSA staff members in an attempt to accurately define the problem and provide the framework of a development and test program designed to meet the principal objectives. Two meetings with the contractors, Firewel and the Clark Companies have been held and proposals will shortly be on hand covering the various phases and objectives of the program. This present communication will summarize the current status of this particular project for the cognizance of those OSA personnel responsible for evaluating the program and making final recommendation to the Chief on its adoption.

B - Specific Objectives for Proposed Improvement Program

1. Safe ejection under zero altitude, zero velocity conditions. This model improvement program has been under study now for over a year but has been on dead center now for the past several

2. Safer parachute descent rates after ejection under all conditions using a 35' canopy. This portion of the program is somewhat tied in with (1) and cannot logically proceed until a positive decision on the latter has been made.

3. Greater reliability and safety in the emergency oxygen and suit pressurization mechanisms through optimization of seatpack and accessory components. This particular phase of the program has been ready to proceed for six months but as yet no go-ahead has been given.

4. Improved pilot comfort and effectiveness to be achieved through the use of a full rather than the partial pressure suit. With the exception of the specific problem of modifying the aircraft components to accept the FPS, all details of this portion of the program have been adequately defined and are awaiting official approval. Although a reasonable test could be conducted wearing the FPS by using the current gaseous oxygen, only about 4-5 hours flight time could be realized. Since the new buy of improved 'I' vehicles would include provisions for the FPS, it makes good sense to modify one of the current 'I' vehicles with a IOX supply in order to provide a thorough and complete feasibility testing period for this item in the program; flight times up to 12 hours could then be realized.

5. Improved survivability following emergency descent through provision of increased volume (not weight) within the seat pack, thus allowing for wider latitude in choice of survival equipment and greater ease in packing same. This objective can be achieved simultaneously with that stated in paragraph three above and would be dealt with concurrently.

6. Greater reliability and safety in the total breathing oxygen and suit pressurization systems through improvement and standardization of the inspection and testing procedures and equipment. Action has been initiated on this item and the first prototype is due out of the contractor on or about 15 December and will be sent out to North Base for final test and evaluation. This particular phase of the total program should be expanded to include a study of the overall equipments and procedures currently being used

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during pre- and post-mission activities to determine status of aircrew protective equipment. Specific attention should be given to the development of improved test and check-out equipment which will virtually eliminate the probability of human error during the pre-mission check-out procedures.

C - Further Action Required

1. A positive decision by the Chief, OSA and subsequent support and guidance from responsible staff members is needed if this program is to get underway. If a negative decision is reached after due consideration, it is recommended that same be transmitted in written form to the commanders of the Idealist operational units. Otherwise the OSA- R&D personnel, including this consultant, will continue to receive oral and written requests for active prosecution of the improvement program.

2. Notation should be made of the fact that all aspects of this proposed program would be directly contributory to the test and production of a new Idealist vehicle. At the same time, it is the majority opinion that the proposed program should proceed regardless of the ultimate fate of the new vehicle. The improvements recommended can be substantiated and validated on the basis of current operations and equipment; therefore it would appear that only lack of adequate funds would prohibit active prosecution of the program.

3. In the process of pursuing these project activities to date, all contractors except the prime one have been commendably responsive to all requirements placed upon them, both in terms of representation at conferences and submission of proposals and estimates. For reasons largely unknown, the prime vehicle contractor at Van Nuys has thus far ignored requests for his participation in planning conferences and for pertinent information dealing with many vehicular integration questions. Needless to say, the program cannot proceed without the active assistance and cooperation of the prime contractor.

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